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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,470	10/22/2002	Haren S. Gandhi	FCHM 0119 PUS / 201-0877	5652
28395	7590	09/09/2005	EXAMINER	
BROOKS KUSHMAN P.C./FGTL 1000 TOWN CENTER 22ND FLOOR SOUTHFIELD, MI 48075-1238			TRAN, HIEN THI	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/065,470

Applicant(s)

GANDHI ET AL.

Examiner

Hien Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 36-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 and 39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-39 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/16/02 & 9/27/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Group I, claims 1-35, 39 in the reply filed on 6/20/05 is acknowledged.
2. Claims 36-38 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 6/20/05.

### *Drawings*

3. Figure 1b should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "10" (page 17, line 4). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

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pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the drawings to comply with CFR 1.84(p)(5), e.g. they should include the reference sign(s) mentioned in the specification and vice versa.

#### ***Specification***

6. The disclosure is objected to because of the following informalities:

On page 5, line 19 it is unclear as to which Figure 4 is implied (note Figures 4a, 4b and 4c). See page 6, lines 4, 7, 11 and page 12, line 19 likewise.

On page 6, line 6 it is unclear as to which Figure 5 is implied (note Figures 5a, 5b and 5c); in line 10 it is unclear as to which Figure 6 is implied (note Figures 6a, 6b); in line 14 it is unclear as to which Figure 7 is implied (note Figures 7a, 7b and 7c).

On page 9, lines 21, 30 it is unclear as to which Figure 1 is implied (note Figures 1a, 1b).

Appropriate correction is required.

7. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

#### ***Claim Objections***

8. Claims 18 and 24 are objected to because of the following informalities:

In claim 18, line 1 --the-- should be inserted after "and". See claim 24, line 8 likewise.

Appropriate correction is required.

9. The claims have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the claims.

***Claim Rejections - 35 USC § 112***

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 2-10, 25, 31-32, 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, lines 1-2 it is unclear as to what is intended by "one or more alternating layers ... are provided ..." (see claim 3 likewise).

In claim 4, lines 1-2 it is unclear as to what is intended by "one or more alternating zones ... are provided ..." (see claims 8, 25 likewise).

In claims 9 and 10, it is unclear as to what structural limitation applicants are attempting to recite. See claims 31-32, 39 likewise.

12. The claims have not been checked to the extent necessary to determine the presence of all possible errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the claims.

***Claim Rejections - 35 USC § 102***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1, 9-10, 12, 15-17, 19, 30-32, 34, 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Kinugasa et al (EP 773,354).

With respect to claims 1, 9, 19, 30-31, 39, Kinugasa et al discloses an emission control system comprising: a lean NO<sub>x</sub> trap in communication with an exhaust stream for reducing NO<sub>x</sub> emissions; a NH<sub>3</sub>-SCR catalyst in communication with the exhaust stream for adsorbing NH<sub>3</sub> and wherein the NH<sub>3</sub> adsorbed by the NH<sub>3</sub>-SCR catalyst reacts with NO<sub>x</sub> in the exhaust stream to improve the reduction of NO<sub>x</sub> and NH<sub>3</sub>, the NH<sub>3</sub>-SCR catalyst being separate from and downstream from the lean NO<sub>x</sub> trap (col. 4, line 55 to col. 6, line 45).

With respect to claims 10, 12, 32, 34, 39, Kinugasa et al discloses that the lean NO<sub>x</sub> trap comprises precious metal, such as Pt, Pd, etc.. The oxygen storage capacity of the trap has not been mentioned therein and therefore meets the instant claim 10.

With respect to claims 15-17, Kinugasa et al discloses that the NH<sub>3</sub>-SCR catalyst comprises material for NH<sub>3</sub> adsorbing material wherein the NH<sub>3</sub> adsorbing material is capable of converting NO<sub>x</sub> and NH<sub>3</sub> to nitrogen; the NH<sub>3</sub>-SCR catalyst comprises a base metal, such as Cu, and a support of zeolite (col. 6, lines 9-45; col. 21, lines 25-29).

Instant claims 1, 9-10, 12, 15-17, 19, 30-32, 34, 39 structurally read on the apparatus of Kinugasa et al.

15. Claims 1, 9-12, 14-17, 19, 30-34, 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Kinugasa et al (US 6,109,024).

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With respect to claims 1, 19, 30, 39, Kinugasa et al discloses an emission control system comprising: a lean NO<sub>x</sub> trap 70a, b, in communication with an exhaust stream for reducing NO<sub>x</sub> emissions; a NH<sub>3</sub>-SCR catalyst 9 in communication with the exhaust stream for adsorbing NH<sub>3</sub> and wherein the NH<sub>3</sub> adsorbed by the NH<sub>3</sub>-SCR catalyst reacts with NO<sub>x</sub> in the exhaust stream to improve the reduction of NO<sub>x</sub> and NH<sub>3</sub>, the NH<sub>3</sub>-SCR catalyst being separate from and downstream from the lean NO<sub>x</sub> trap (see, for example, Fig. 26, col. 8, line 6 to col. 9, line 41).

With respect to claims 9-12, 14, 31-34, 39, Kinugasa et al discloses that the system is optimized to produce sufficient amount of NH<sub>3</sub>, and that the lean NO<sub>x</sub> trap comprises precious metal, such as Pt, Pd, etc., and NO<sub>x</sub> storage material, such as alkali metal, etc. (col. 2, line 49 to col. 3, line 42).

With respect to claims 15-17, Kinugasa et al discloses that the NH<sub>3</sub>-SCR catalyst comprises material for NH<sub>3</sub> adsorbing material wherein the NH<sub>3</sub> adsorbing material is capable of converting NO<sub>x</sub> and NH<sub>3</sub> to nitrogen; the NH<sub>3</sub>-SCR catalyst comprises a base metal, such as Cu, and a support of zeolite (col. 9, line 3 to col. 10, line 65).

Instant claims 1, 9-12, 14-17, 19, 30-34, 39 structurally read on the apparatus of Kinugasa et al.

### ***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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17. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

18. The art area applicable to the instant invention is that of an emission control system.

One of ordinary skill in this art is considered to have at least a B.S. degree, with additional education in the field and at least 5 years practical experience working in the art; is aware of the state of the art as shown by the references of record, to include those cited by applicants and the examiner (*ESSO Research & Engineering V Kahn & Co*, 183 USPQ 582 1974) and who is presumed to know something about the art apart from what references alone teach (*In re Bode*, 193 USPQ 12, (16) CCPA 1977); and who is motivated by economics to depart from the prior art to reduce costs consistent with the desired product characteristics. *In re Clinton* 188 USPQ 365, 367 (CCPA 1976) and *In re Thompson* 192 USPQ 275, 277 (CCPA 1976).

19. Claims 2-8, 18, 20-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinugasa et al (either US 6,109,024 or EP 773,354) in view of Fuwa et al (6,345,496).

The apparatus of Kinugasa et al is substantially the same as that of the instant claims, but is silent as to whether the NO<sub>x</sub> trap and the NH<sub>3</sub>-SCR catalyst may be alternating layers/zones in a single shell or substrate.



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However, Fuwa et al discloses the conventionality of providing a control system in which the NO<sub>x</sub> trap and the NH<sub>3</sub>-SCR catalyst are alternating layers/zones in a single shell/substrate or mixed to form a single layer on one substrate (col. 25, line 50 to col. 6, line 7; col. 27, lines 13-23; col. 30, line 45 to col. 31, line 6).

It would have been obvious to one having ordinary skill in the art to construct the system of Kinugasa et al so as forming the NO<sub>x</sub> trap and the NH<sub>3</sub>-SCR catalyst in alternating layers/zones in a single shell/substrate or a single layer on one substrate to provide good purification of the exhaust gas while ensuring the endurance of the NH<sub>3</sub>-SCR catalyst or make the purification device simpler as taught by Fuwa et al, and since use of such is conventional in the art and no cause for patentability here.

It would have been obvious to one having ordinary skill in the art to select an appropriate dimension for each zone in the system since it has been held that where the general conditions of a claim are disclosed in the prior art, merely discovering the relative dimension involves only routine skill in the art. *In re Gardner v. TEC systems, Inc.* 725 F.2d 1338, 220 USPQ 777.

20. Claims 13 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinugasa et al (either US 6,109,024 or EP 773,354) in view of Yamada et al (6,221,804).

The apparatus of Kinugasa et al is substantially the same as that of the instant claims, but fails to disclose the specific material for the lean NO<sub>x</sub> trap as claimed.

However, Yamada et al discloses that the lean NO<sub>x</sub> trap further comprises a composite of cerium and zirconium (col. 6, lines 3-45).

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It would have been obvious to one having ordinary skill in the art to provide a composite oxide of cerium and zirconium in the lean NO<sub>x</sub> trap material of Kinugasa et al so as to provide high thermal resistance for the system as taught by Yamada et al.

21. Claims 11, 14 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinugasa et al (EP 773,354) in view of Kinugasa et al (US 6,109,024) or Fuwa et al (6,345,496).

The apparatus of Kinugasa et al EP '354 is substantially the same as that of the instant claims, but is silent as to whether the NO<sub>x</sub> trap may contain both the precious metal and the NO<sub>x</sub> storage material.

However, both Kinugasa et al US '024 and Fuwa et al show the conventionality of providing the NO<sub>x</sub> trap containing both the precious metal and the NO<sub>x</sub> storage material.

It would have been obvious to one having ordinary skill in the art to provide both the precious metal and the NO<sub>x</sub> storage material in the NO<sub>x</sub> trap of Kinugasa et al EP '354 as taught by both Kinugasa et al US '024 and Fuwa et al so as to store NO<sub>x</sub> as well as to form the NH<sub>3</sub>, thereby to simplify the purification system thereof.

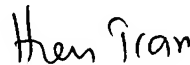
### ***Conclusion***

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**Hien Tran**  
**Primary Examiner**  
**Art Unit 1764**

HT